Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended)   A computer-based method for teaching a knowledge-based database for automatic defect classification, which comprises:

(a) accepting, using a specially programmed computer, selecting a user selection of a review data file;

(b) accepting, using the specially programmed computer, inputting parameters and data input by a user on one page of a learning mode whereby the parameters and the data are known to the user;

(c) starting, using the specially programmed computer, an alignment procedure and a procedure for adjusting light intensity, the alignment procedure with respect to at least one point on a wafer;

(d) automatically adjusting, using the specially programmed computer, the optimal intensity of the light intensity lighting by approaching a few defects accepting a selection of a first specific number of defects to approach on a first wafer and taking respective pictures of the first specific number of defects on the first wafer and if necessary regulating to the optimal illumination using the respective pictures;

(e) checking, using the specially programmed computer, a detection using a few examples, whereby an the optimization of the detection parameters is carried out by accepting a selection of a second specific number of defects to approach on a second wafer, taking pictures of the second specific number of defects on the second wafer, displaying the pictures, and using the pictures to adjust a detection threshold using pictures;

(f) automatically approaching all defects of a wafer or wafers, whereby the respective defect is detected and a descriptor is assigned, by the specially programmed computer, to the respective defect; and,

2

(g) analyzing and automatically grouping, using the specially programmed computer, [[of]] the descriptors of the defect.

2. (previously presented) The method according to Claim 1, wherein the input of parameters and data further comprise the selection of elements present on a semiconductor substrate, wherein the elements can be memory circuits, logic circuits, a blank wafer without resist or with resist.

3. (previously presented) The method according to Claim 2, wherein the parameters or data of layers on the wafer comprise the data of a polymer layer, an oxide layer, a contact or a metal layer.

4. (previously presented) The method according to Claim 1, wherein the user selects a lighting type, at least one lens used and a focus type.

5. (previously presented) The method according to Claim 4, wherein bright field, UV or DUV is selected as the lighting type.

6. (previously presented) The method according to Claim 4, wherein a default setting is bright field and the lens has a 100X magnification.

7. (previously presented) The method according to Claim 4, wherein a manual two-point alignment is carried out; wherein a first point is aligned manually by approaching a table; wherein during the teaching of the first point, data is automatically stored for the auto alignment file; and each alignment point is taught with three different magnifications of the lens.

8. (previously presented) The method according to Claim 1, wherein the adjusting of the optimal intensity of illumination is achieved by random selection of a specific number of defects; approaching the selected defects; taking a picture of each defect; whereby a start value for the

brightness of the illumination and adjustment of the illumination is achieved using a histogram evaluation.

9. (previously presented) The method according to Claim 8, wherein defects that are no larger than 25 % of a video image width and height are used to adjust the optimal intensity of the illumination.

10. (previously presented) The method according to Claim 8, wherein 20 defects are used to adjust the intensity of the illumination.

11. (previously presented) The method according to Claim 1, wherein the defects on the wafer that are automatically approached, have pictures taken which are temporarily stored until pictures are taken of all the defects.

12. (previously presented) The method according to Claim 11, wherein after all the pictures are taken, they are shown on a display as thumbnails.

13. (previously presented) The method according to Claim 12, wherein a few thumbnails are rejected if the thumbnails exceed a threshold value for the focus.

14. (previously presented) The method according to Claim 1, wherein the analysis and automatic grouping of the descriptors of the defects divides the thumbnails of the defects recorded into groups, and on the display the first nine examples of a selected group of defects are displayed in a thumbnail representation.